

BRIDGEWATER

HAMILTON EYE CLINIC



A guide to  
**GLAUCOMA**

Waikato's Specialist Eye Centre  
and Eye Surgery Facility



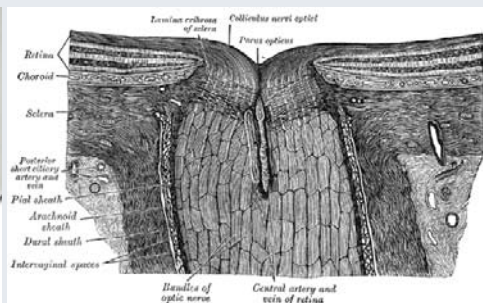
## Glaucoma

Glaucoma is a common eye condition (or group of conditions) that can lead to blindness - in fact glaucoma is the second most common cause of blindness in New Zealand and around the world. Fortunately if glaucoma is detected early and managed appropriately in nearly every case blindness is preventable. Glaucoma is most often controlled with eye-drops, but laser, tablets and surgery are also used in its treatment.

Glaucoma is a disease of the optic nerve, the “telephone cable” that carries visual information from the eye, where images are captured, to the brain, the computer that makes sense of what is seen. Most cases of glaucoma proceed very slowly as optic nerve fibres are gradually lost. Unfortunately the brain does not recognise that patches of vision are missing until the damage from glaucoma is very advanced, so sufferers of glaucoma will only be aware they have a problem very late in the disease. It is for this reason that it is of the utmost importance that we all have regular eye examinations from the age of 45, earlier if we have glaucoma in the family. People go blind because they have glaucoma but haven't realised this, often for many years.



Telephone cable

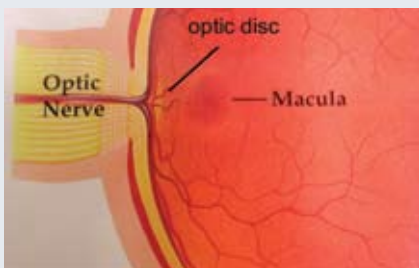


Optic nerve

The visual system is like a digital camera (the eye) connected to a computer (the brain) that makes sense of what the camera detects. The optic nerve is the “cable” that connects the eye to the brain.



Glaucoma damages the optic nerve where it begins, at what we call the optic disc, here, at the back of the eye



Nerve fibres carry visual messages from all parts of the retina, which lines the eye and detects light and colour. These nerve fibres come together at the optic disc to form the optic nerve.

## Types of Glaucoma

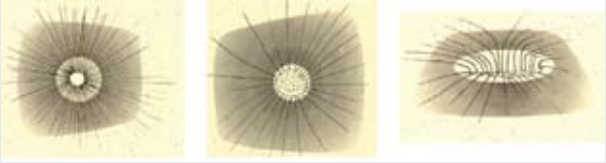
There are many different types of glaucoma. Most people with glaucoma however have forms of chronic (long-running) open angle glaucoma. Babies, children and young adults can get glaucoma, but these types of glaucoma are rare. Glaucoma becomes much more common as we get older, occurring in 2% of the population over 40 but in as much as 11% of the population over 80.

The second most common type of glaucoma is Primary Angle Closure Glaucoma. This can develop very slowly, like chronic open angle glaucoma, or can occur suddenly in the case of Acute Angle Closure Glaucoma, where the eye becomes very red and painful and vision is lost in a matter of days if appropriate treatment is not begun. Acute Glaucoma is the exception of the glaucomas: **normally with glaucoma there is no perceived visual disturbance nor eye discomfort to warn that someone has glaucoma.**

Glaucoma may also follow on from other eye disease or eye injury.

## Detection:

Glaucoma is detected through routine eye examinations by your optometrist. Glaucoma causes a characteristic type of erosion of the optic disc we call cupping, which can be seen when the back of your eye is examined.



Drawings of a normal disc (left) with a normal sized cup, then a disc with 'cupping', enlargement of the cup due to loss of nerve tissue from glaucoma



Photos of cupped discs: in the third disc small disc haemorrhages also typical of glaucoma can be seen



Glaucoma is often associated with elevated eye pressure, and discovery of this may be how your glaucoma is detected. Finally, glaucoma causes loss of visual field, patches of one's vision. This is detected by visual field testing. Monitoring the visual field is particularly important to ensure that glaucoma is controlled and not getting worse – most people with glaucoma will have field tests once a year.

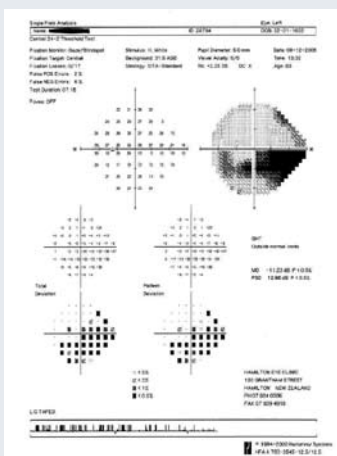
## Management of Glaucoma:

When your optometrist detects that you have glaucoma you will be referred to an ophthalmologist who will assess and then usually treat your glaucoma. As well as asking about past eye problems and your general health, and examining your eye, your ophthalmologist will establish your glaucoma diagnosis and a treatment plan doing some or all of the following:

- establish at what level your eye pressures are running
- ensure he has a reliable, repeatable record of your visual fields
- measure your corneal thickness
- record your optic disc appearance with stereo photos
- measure your nerve fibre layer thickness with the OCT.



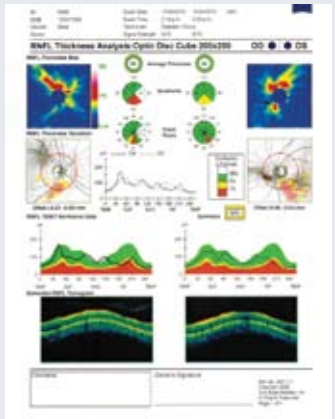
Humphrey visual field testing



A visual field printout showing typical field loss from glaucoma

## OCT: Optical Coherence Tomography

Management of glaucoma is all about detecting that glaucoma is present, then monitoring the patient to detect whether the disease is controlled, or that more damage is occurring. This is done in several ways. It is important to examine the patient's **optic discs** for further cupping or disc haemorrhages which are indications of progressive glaucoma. For many discs however only big changes can be detected. **Visual field** testing is another important way to monitor glaucoma, but field loss occurs relatively late in the disease, and even good subjects will have variable field results depending on how tired they are, and how well they can concentrate on this demanding test. The **OCT** is a relatively new, very sophisticated machine that can actually measure the thickness of the nerve fibre layer at the back of the eye, down to microns, thousandths of a millimetre. We can compare an individual's OCT result to normal references, and in particular, to the individual's test results from previous years, to see if change has occurred. For the patient the test is simple and painless, rather like having a photograph taken.



Patient on OCT machine

## Treatment of Glaucoma

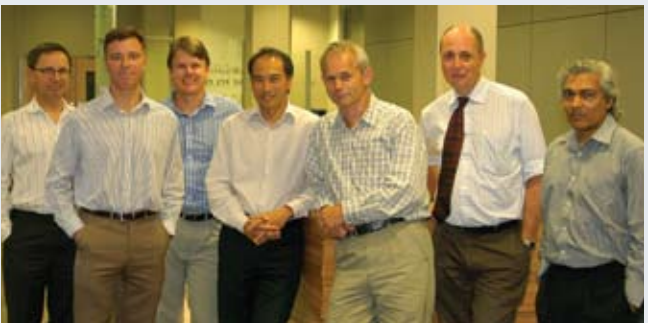
Whilst there is a lot more to glaucoma than eye pressure, at present the only way we can **treat** glaucoma is by lowering eye pressure. The good news is that if we get the eye pressure down to a safe level, in almost all cases of glaucoma we will halt the disease, or at least slow it down so that significant vision impairment does not occur in the patient's lifetime. The level of pressure that is safe is different for each patient, so we set "target pressures" for each individual. (Generally speaking, the lower the eye pressure the better).

Most glaucoma patients instil **eye drops** to keep their eye pressures at a safe level. A patient may be on one, two or more different glaucoma eye drops. Laser treatment (**laser trabeculoplasty**) is a very safe and generally painless way to treat glaucoma and should be considered for all newly diagnosed cases of glaucoma. Successful laser treatment can keep the eye pressure down for many years without requiring eye drops. (The laser used is very different from the laser used to allow people to manage without glasses.) **Surgery** is also used to treat glaucoma: it is employed when the eye pressure cannot be controlled by drops and laser, and when patients cannot tolerate eye drops (or manage to get them in regularly). Several large studies in Britain and the USA have shown that surgery should also be considered for newly diagnosed glaucoma.

Having glaucoma means that you must have a life-long association with your ophthalmologist. The disease can be controlled but not cured, and it is essential that patients are seen regularly (for most this is six monthly). Typically glaucoma is well controlled for a number of years but then at a follow-up visit it is found that control has been lost, for instance that the visual field is worse, and that a change in treatment is necessary. It is the optometrist's, the ophthalmologist's, and the patient's responsibility to make sure that patients do not become "lost to follow-up".

## Hamilton Eye Clinic and Glaucoma

Modern glaucoma care depends on technology, and at Hamilton Eye Clinic we are equipped with the best modern equipment to deliver state of the art glaucoma care, including a Cirrus spectral domain OCT machine and modern lasers. All ophthalmologists care for glaucoma: some cases of glaucoma however are more challenging, and Hamilton Eye Clinic has two ophthalmologists who specialise in glaucoma for these cases. Hamilton Eye Clinic is situated in the Bridgewater Building on Grantham St in Hamilton but runs peripheral clinics in Thames, Huntly, Te Awamutu, Cambridge, Matamata and Morrinsville.



### HAMILTON EYE CLINIC CONSULTANTS:

David Worsley, Stephen Guest, Michael Merriman, Stephen Ng, John Dickson, James Stewart, Rohan Weerekoon, and Bheema Patil (not in photo)

Ph: 07 834 0006

130 Grantham St, Hamilton  
[www.hamiltoneyeclinic.co.nz](http://www.hamiltoneyeclinic.co.nz)

Email: [info@hamiltoneyeclinic.co.nz](mailto:info@hamiltoneyeclinic.co.nz)